



10089422 111300

Atty. Docket No.: 3364.P064

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re the application of: )  
Ga-Jin Jeong et al. )  
Serial No.: 10/089,422 )  
PCT/PTO Receipt Date: March 29, 2002 )  
For: BEAN CURD CONTAINING LACTIC ACID )  
FERMENTING BACTERIA CULTURE FLUID )  
AND A METHOD FOR PREPARING THE )  
SAME AND BEVERAGE CONTAINING LACTIC )  
ACID FERMENTING BACTERIA AND A )  
METHOD FOR PREPARING THE SAME )

Examiner:

Art Group:

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents  
Washington, D.C. 20231

Dear Sir:

Please enter the following preliminary amendment for the present patent application.

In the Specification

After the title, please insert the following:

-- The present patent application is a non-provisional application of International Application No.  
PCT/KR00/01461, filed December 14, 2000. --

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN

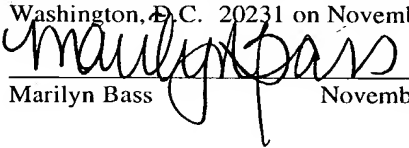
Dated: November 5, 2002

By:   
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Washington, D.C. 20231 on November 5, 2002.

  
Marilyn Bass November 5, 2002

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10/089422



Atty. Docket: 003364.P064

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application for:	)	
	)	Examiner:
Ga-Jin Jeong, et al.	)	
	)	Art Group:
Serial No.: 10/089,422	)	
	)	
Filed: March 29, 2002	)	
	)	
For: BEAN CURD CONTAINING LACTIC ACID FERMENTING	)	
BACTERIA CULTURE FLUID AND A METHOD FOR	)	
<u>PREPARING THE SAME</u>	)	

**PRELIMINARY AMENDMENT**

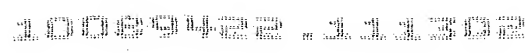
Hon. Commissioner of  
Patents and Trademarks  
Washington, D.C. 20231

Dear Sir:

Submitted herewith is a substitute specification and red lined copy of the substitute specification indicating the changes from the original application, as filed.

In this connection, it is noted that the substitute specification is identical to the application as filed accepting that duplicates of pages 5, 6, and 7 have been removed. Accordingly, in the red lined copy of the substitute specification, the extra copy of pages 5, 6, and 7 are shown in strike through character. Inasmuch as the only change to the







**BEAN CURD CONTAINING LACTIC ACID BACTERIA CULTURE  
FLUID AND A METHOD FOR PREPARING THE SAME, AND BEVERAGE  
CONTAINING LACTIC ACID BACTERIA AND A METHOD FOR  
PREPARING THE SAME**

5

**BACKGROUND OF THE INVENTION**

**(a) Field of the Invention**

The present invention relates to a method for preparing bean curd containing lactic acid bacteria culture, and to bean curd prepared according to the method, to a beverage containing lactic acid bacteria, and to a method  
10 for preparing the same. Specifically, the present invention relates to a method for preparing bean curd containing lactic acid bacteria by adding lactic acid bacteria culture to bean soup, and bean curd prepared according to the method, a method for preparing a beverage containing lactic acid using bean soup remaining after preparing the bean curd, and a beverage  
15 containing lactic acid prepared according to the method.

**(b) Description of the Related Art**

Proteins separated from beans can be denatured from soluble proteins to non-soluble proteins according to the concentration of salts, and these non-soluble proteins are compressed to make a bean curd that is  
20 loved by Orientals. In addition, positive health effects from foods made with beans, such as bean curd, have been newly found.

Beans are known to have anticancer effects due to lecithin, and to contain other healthful ingredients. For examples, an anticancer drug and a

hypotensive are separated from soybean paste made from beans, and bean sprouts contain asparagine which protects the liver from hangovers.

However, bean curds are conventionally prepared using brine, and a new preparation method of bean curds has not been developed from the conventional method. Brine is a by-product obtained when sea salt absorbs moisture in the air due to its deliquescence property to dissolve and wash away ingredients other than the salts, over a long period of time. Accordingly, brine comprises various dissolved ingredients which are contained in sea water, including cations such as magnesium that are known to play an important role in making bean curds.

A deficiency in magnesium causes serious health problems since magnesium ions are physiologically important, but a high intake thereof can also cause physical problems. In addition, unpurified salts generate a bitter taste due to magnesium ions.

Accordingly, it can be predicted that the magnesium intake of Koreans exceeds a sufficient amount since bean curds made using brine are presently sold on the market, and unpurified salts are used in homes. Although the amount of magnesium intake from bean curds is not excessive because the amount of magnesium remaining in bean curds is not large, since Koreans habitually use sauces including fermented soybeans, considering the amount of magnesium contained in sauces, they consume an excessive amount of magnesium and are consequently attacked by related diseases of adults.





The lactic acid bacteria culture is preferably prepared by mixing one or more of vegetables, fruits and mushrooms at room temperature using purified water such as tapped water in a basic medium comprising 2.5% salts and 1 % sugar. Although the lactic acid bacteria can be prepared at room  
5 temperature without sterilization, sterilizing and aseptic operation should be preceded with for commercial production.

Favorable lactic acid bacteria existing in Kimchi are found in the lactic acid bacteria culture prepared as the above.

Any vegetables including radishes, cabbages, etc. can be used as  
10 the vegetables, and any fruit including pears, pineapples, etc. can be used as the fruits.

In addition, bean curd dregs which is solid components produced after filtering heated soybeans, can be added to one material or more selected from vegetables, fruits, and mushrooms. Specifically, the bean  
15 curd dregs can be utilized as good nitrogen and carbon sources when culturing lactic acid bacteria, because they are pulverized beans and can be further decomposed using microorganism enzymes. The bean curd dregs can be a substitute for medium for culturing the lactic acid, it cuts down the production cost.

20 Lactic acid bacteria have a property of inhibiting the growths of disease-causing bacteria and harmful bacteria because of the lactic acid produced by lactic acid fermentation, and they are used as a medicine for intestinal disorders because they inhabit the intestine to prevent abnormal

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fermentation of various bacteria. In addition, they are Gram positive and are common anaerobic or anaerobic bacteria, they have no motility, most are catalase negative, and they require various vitamins, amino acids, peptides, etc. for their growth. These lactic acid bacteria are largely classified into

5 lactic acid bacillus and lactic acid micrococcus.

The representative example of the lactic acid bacillus is lactic acid bacteria pertaining to the genus *Lactobacillus*, which are aerobic lactic acid bacteria existing in the intestine of all mammals and in other animals, and are used to treat autopoisoning of the intestine.

10 The lactic acid micrococcus is further classified into the genera *Streptococcus*, *Pediococcus* and *Leuconostoc*, the lactic acid bacteria pertaining to the genus *Pediococcus* is streptococcus, and *P. pentosaceus* is mainly found in Kimchi. In addition, lactic acid bacteria pertaining to the genus *Leuconostoc* are diplococcus and *L. mesenteroides* produce a lot of

15 gluten-like substance from sugar.

In the present invention, lactic acid bacteria pertaining to the genus *Leuconostoc* are preferably produced, because they are found in lactic acid fermenting foods such as Kimchi, they produce a similar amount of lactic acid as lactic acid bacteria pertaining to other genera and they are

20 inexpensive.

The degree of lactic acid production decreases to pH 5.0 or lower within 48 hours after fermentation in the case of natural fermentation, thereby inhibiting the growth of non-acid resistant bacteria. Lactic acid

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bacteria culture undergoing sufficient lactic acid production for 72 hours or more is preferably used. Other lactic acid bacteria can be used to prepare bean curd by controlling growth conditions when preparing lactic acid bacteria culture.

5           The preferable lactic acid bacteria culture is from Kimchi.

In addition, bean curd is conventionally prepared in hot conditions by boiling bean soup, while in the present invention, lactic acid bacteria culture is added to bean soup after the bean soup is cooled so that the bean curd contains living lactic acid bacteria. Thus, even when cooked at high  
10   temperature, although lactic acid bacteria cannot survive, the effect of the lactic acid intake lasts and adult disease prevention and intestine cleaning effects are shown, and the bean curd preserving effect is still shown until that point.

The temperature to which to cool the bean soup is preferably 40 °C  
15   or less.

Conventionally, in order to prepare bean curd, raw material soybeans are carefully selected and adulterants other than soybeans are removed. After selection, the soybeans are washed well and soaked in water to sufficiently absorb water. At this point, the weight of the soybeans  
20   increases by approximately 2.2 to 2.3 times. The soybeans are pulverized while absorbing water, and the pulverized soybeans are heated to approximately 100 °C using sour milk neutralized with  $\text{Ca(OH)}_2$  or silicon resin as a deformer. The heated pulverized soybeans are filtered to obtain

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bean soup, and the bean soup is coagulated at 70 to 75 °C using brine or CaCl<sub>2</sub>, etc., while stirring, to obtain bean curd. In the present invention, after coagulating the bean soup at 70 to 75 °C, the heated pulverized soybeans are cooled, and lactic acid bacteria culture is added to the cooled  
5 soybeans without using brine or CaCl<sub>2</sub> to coagulate the bean soup, thereby preparing bean curd comprising lactic acid bacteria.

The present invention also provides a method for preparing a beverage containing lactic acid bacteria as the above by mixing bean soup remaining after preparing bean curd using the lactic acid bacteria culture with  
10 syrup or fruit juice.

For example of the present invention, a beverage containing lactic acid bacteria as the above comprising the steps of:

- a) preparing lactic acid bacteria culture by fermenting i ) salt, sugar, water and ii) material which is one or more selected from a  
15 group consisting of vegetables, fruits, and a mixture thereof with lactic acid bacteria;
- b) preparing the bean soup by pulverizing the soaked soy bean in water, heating, and filtering;
- c) adding the lactic acid bacteria culture of step a) to the bean soup cooled at 40 °C; and  
20
- d) mixing syrup or fruit juice with the bean soup remaining after preparing bean curds of step c).

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The present invention also provides a lactic acid beverage.



[illegible]

Fig. 1 shows a process chart for preparing lactic acid bean curd and

5 a lactic acid beverage according to one embodiment of the present invention

The present invention will now be explained with reference to the

10      Examples 1 – 7

50 g of cabbage, 60 g of garlic, 100 g of pear, 40 g of unripe hot peppers, 65 g of pineapple, 10 g of potatoes and 75 g of radish were weighed and introduced into each 360 mL bottles. A mixture of salts and sugar was prepared by mixing 100 g of salts, 40 g of sugar, and water such that the mixture reached 4 L. 330, 337, 301, 347, 337, 290 and 284 mL of the mixture were respectively introduced into each bottle, and the bottles were left to stand at room temperature for 3 days.

The pH of the lactic acid bacteria culture prepared according to the

20 Comparative Example 1

The solution was prepared by mixing salts, sugar and water. The

### Examples 8 – 14

[illegible]

### Comparative Example 2

10 the solution of Comparative Example 1.

### Comparative Example 3

Bean curd was prepared by the same method as in Comparative Example 2, except that only soybean milk was used, with no solution.

The results are presented in the following Table 1.

15 [Table 1]

	Coagulation
Example 8	O
Example 9	O
Example 10	O
Example 11	O
Example 12	O
Example 13	O
Example 14	O





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IPEA/KR 22.02.2002

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FLUID AND A METHOD FOR PREPARING THE SAME, AND BEVERAGE  
CONTAINING LACTIC ACID BACTERIA AND A METHOD FOR  
PREPARING THE SAME**

**ART 34 AMDT**

5

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Beans are known to have anticancer effects due to lecithin, and to contain other healthful ingredients. For examples, an anticancer drug and a

**AMENDED SHEET (ART. 34)**